

Original article

Assessment of Soico-Demographic Factors and Dietary Habits among Hypertension Patient in Derna, Libya

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ABSTRACT

Hypertension is a global public health problem. It is one of the major causes of premature death worldwide. This study carried out in Derna city Libya to study socio-demographic characteristics and to assess dietary habits among 150 hypertension patients aged 20 to 96 years. Data were obtained from patients by cross-sectional then analyzed using SPSS version 24. The results revealed 100(66.7%) have family history. Additionally large number of patients were with history of diabetes mellitus 117(78.0%). Regarding the anthropometric measurements of patients 44.0 % category as overweight and 34.0 % were obese. In contrast, positive correlation was noted between body weight and different age groups of patients. Moreover, 66(44.0%) of them were consumed fruits every day also just about 12(8.0%) consumed vegetables each day. In addition, 50(33.3%) and 81(54.0%) of patients were consumed canned and fried food respectively every day. Moreover, 67(44.7%) and 52(34.7%) were consumed meat products and eggs respectively every day. Our investigations revealed that intakes of meat products, eggs, canned and fried food were high while consumption vegetables and fruits were relatively limited which linked to poor health and increased risk of hypertension complication.

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INTRODUCTION

Hypertension is a condition that occurs when your blood pressure increases to unhealthy levels. It affects one billion people worldwide, or one in four adults, and is the number on risk factor for death globally. About 68.4% of Libyan males and 48.4 % of Libyan females who suffer from high blood pressure are under treatment [1]. It is a serious medical and expensive public health problem and a challenge for community health care professionals. It is continuous to be the leading risk factor for death [2]. 90% of the cases are primary hypertension with no obvious underlying medical cause and tends to run in families, age, sex and race can influence risk for the disease. Other life-style choices behaviors like smoking cigarettes [3]. Thus, associated risk factors with hypertension are obesity, diabetes, high sodium intake, stress and physical inactivity [4]. Consequently, dietary pattern analysis has emerged as a multidimensional approach to examine the relationship between diet and the risk of chronic diseases, and it considers the combined effects of foods and potentially facilitates nutritional recommendations [5]. This study carried out to study socio-demographic characteristics and to assess dietary patterns among hypertension patients aged 20 to 96 years in Derna –Libya.

METHODS

The study included 150 hypertension patients living in the Derna region of Libya. Data was collected from patients by questionnaires administered by the researcher. Information on the questionnaire included anthropometric measurements (weight, height) taken at the same time. In addition, socio-demographic characteristics.

Patients were weighed on personal Seca scales Portable digital scales (brand: Taurus; model: Level-MS/ 8608, Oliana, Spain). Weight recorded to the nearest 0.1 kg. Height measured using a stadiometer attached to scales to the nearest 0.5 cm.

Data were first entered in an Excel file and then results expressed as mean and standard deviation. Chi square calculated to analyze data using SPSS version 24. A value of $P < 0.05$ interpreted as statistically significant.

RESULTS

A total of 150 hypertensive patients were included in this the study. Of these, 89(59.3%) were females and 61(40.7%) were males. Moreover, the mean age of hypertensive patients was 55.54 ± 13.4 years ranged from 20 to 96 years. Most of them were married 139 (92.7%) and 10 (6.7%) were single.

Regarding education level of the participants, more than half of hypertensive patients 72(48.0%) have intermediate education. Another parameter is total family income per month among patients (63.1%) of the families was 1100-2500LYD. There were 61 (40.0 %) were unemployed and large population patients were missing the physical activity (exercise) 110 (73.3%). In this study, it can also be seen that 114(76.0%) of the patients were smoker. Moreover, the highest number of the patients 102 (68.0%) was their dietary salt intake moderate. Also, two third of patients 100(66.7%) have family history of hypertension and 50(33.3%) don't have family history (Table 1).

Table 1. Socio-demographic characteristics of hypertensive patients (n = 15)

Category	No	%	
Patients Age	20-40	20	13.3
	41-60	85	56.7
	61-80	29	19.3
	>80	16	10.7
Gender	Female	89	59.3
	Male	61	40.7
Marital status	Single	10	6.7
	Married	139	92.7
	Divorced	1	0.7
Education level	Illiterate	10	6.7
	Primary	18	12.0
	Intermediate	72	48.0
	High education	50	33.3
Total family income/month	<500 LYD	38	25.3
	600- 1000 LYD	49	32.7
	1100- 2500 LYD	63	42.0
Occupation	Teacher	57	38.0
	Doctor	1	0.7
	Engineer	8	5.3
	Retired	23	15.3
	Doesn't work	61	40.7
Smoking	Smoker	114	76.0
	Non-smoker	36	24.0
Physical activity	Active	40	26.7
	Inactive	110	73.3
Dietary salt intake	Low	41	27.3

	Moderate	102	68.0
	High	7	4.7
Family history	Yes	100	66.70
	No	50	33.30

For disease state of the patients, the large number of patients were with history of diabetes mellitus 117(78.0%) and cardio-vascular diseases 32(21.3%). (Table 2).

Table 2. Chronic diseases among hypertension patients

Chronic disease	Frequency	Percent
Diabetes mellitus	117	78.0
Cardio-vascular diseases	32	21.3
Kidney diseases	1	0.7

Regarding the anthropometric measurements of patients under study are illustrated in table 3, 18.7% of patients had BMI in the normal weight category 2.7% in the underweight category and 44.0% category as overweight and about 34.0% of patients were obese.

Table 3. BMI categories of hypertension patients

BMI categories	No.	%
Underweight	4	2.7
Normal	28	18.7
Overweight	66	44.0
Obese	52	34.7

When data analyzed by gender, the proportion of normal weight for females and males' patients were 0.7% and 2.0% respectively. In contrast, the proportion of overweight and obese females' patient 23.3% and 22.7% respectively were higher than that of males. It could be shown that body weight difference between males and females' patients was non-significant ($p < 0.05$).

Table 4. Body weight categories by gender of hypertension patients

BMI	Gender			X ²	P
	No (%)	Female	Male		
Healthy Weight	4(2.7)	1(2)	1(0.7)	2.305	0.512
Underweight	28(18.7)	17(11.3)	11(7.3)		
Overweight	66(44.0)	35(23.3)	31(20.7)		
Obese	52(34.7)	34(22.7)	18(12)		

When data analyzed by age group, the proportion of 41–60-year-olds in overweight and obese category was (28.7% 20.7%) respectively higher than the proportion of others age groups. In contrast, the proportion of 61-80 and > 80-year-olds in the underweight category was (4.7%). It could be shown that body weight difference between different age groups of patients was-significant ($p < 0.05$); that means positive correlation was noted between body weight and different age groups of patients.

Table 5. Body weight categories by age of hypertension patients

BMI	Age				X ²	P
	20-40	41-60	61-80	>80		
Healthy Weight	2(1.3)	1(0.7)	0(0.0)	1(0.7)	19.52	0.021
Underweight	4(2.7)	10(6.7)	7(4.7)	7(4.7)		
Overweight	9(6.0)	43(28.7)	9(6.0)	5(3.3)		
Obese	5(3.3)	31(20.7)	13(8.7)	3(2.0)		

Table 6 shows. Majority of patients in our study 66(44.0%) consumed fruits every day also just about 12(8.0%) consumed vegetables each day. Additionally, 52(34.7%) of patients were consumed eggs daily. Furthermore, our result estimated 50(33.3%) and 81(54.0%) of patients were consumed canned food and fried food respectively every day. On the other hand, 67(44.7%) of them consumed meat products every day while more than half of patients 106(70.7%) were consume poultry rarely, while most of them 115 (76.7%), 124(82.7%) were consumed coffee and tea respectively rarely.

Table 6. Distribution of hypertensive patient according to food preferences

Food preferences	Rarely	Daily	Weekly	Monthly
	No%	No%	No%	No%
Fruits	75(50)	66(44)	6(4)	3(2)
Vegetables	137(91.3)	12(8)	1(0.7)	6(4)
Eggs	85(56.7)	52(34.7)	1(0.7)	12(8)
Meat products	51(34)	67(44.7)	15(10)	17(11.3)
Poultry	106(70.7)	32(21.3)	1(0.7)	11(7.3)
Canned food	59(39.3)	50(33.3)	14(9.3)	27(18)
Fast food	8(5.3)	43(28.7)	47(31.3)	52(34.7)
Fried food	25(16.7)	81(54)	17(11.3)	27(18)
Coffee	115(76.7)	13(8.7)	3(2)	19(12.7)
Tea	124(82.7)	17(11.3)	3(2)	6(4)

DISCUSSION

The present findings show socio-demographic characteristics and dietary patterns of 150 hypertensive patients in Derna Libya This study with other previous studies indicate that most are elderly people (> 50 years) with hypertension, which agree with the finding by Franklin, S. S. (2006) showed that three of four adults with hypertension were 50 years of age or older [6].

This of course because as human advances in age, as they will be at a greater risk of developing several diseases as hypertension. What's more, hypertension is highly prevalent in the elderly. Several epidemiological surveys conducted in the USA and Europe conclude that hypertension prevalence in the elderly ranges between 53% and 72%. Same prevalence patterns observed in Greece for this specific age group [7]. Moreover, this study shows the incidence of females suffering from hypertension is more than males that was similar in study by Shah, A (2013). In India, which said women were more hypertensive than men [8]. In addition, the marital status has an important role, as married folks were highly susceptible more than single or divorced and so on this maybe be due to the increase of risk of developing gestational hypertension in females. Although we did have a strong correlation between finance and chances of having hypertension it is found that the more the income the lesser the chance of developing the diseases It is important to indicate that most of the cases were retired people, maybe be due to advanced age or to less physical activity [9].

From this study done in Derna it was concluded that large population patients were missing the physical activity (exercise) 110(73.3%) these findings agree with the findings by Börjesson, M., (2016) which found that regular physical activity (PA) reduces the blood pressure (BP) of individuals with hypertension by analyzed the scientific evidence for the BP lowering effect of aerobic PA in 27 randomized controlled studies on individuals with hypertension, and shows that regular medium-to-high-intensity aerobic activity reduces the blood pressure [10].

Our investigations revealed that 114(76.0%) of the patients were smoke which agree with study by Viridis, A (2010) which, found that smoking causes long and short-term increases either in systolic or in diastolic blood pressure values and smoking increases the risk of hypertension by some 2 to 3 times [11]. Moreover, our data showed the highest number of the patients 102 (68.0%) was their dietary salt intake moderate, which agree with the finding by Pei-Fen Zheng in Chinese, which said blood pressure increase is being associated with salt intake with the elderly and the obese being the more sensitive. The high-salt pattern was traditionally considered to be an unhealthy pattern, which was characterized by a high consumption of pickled vegetables, processed meat, cooked meat, bacon, salted fish, and bean paste. Moreover, a positive association between this pattern and hypertension risk. There are several possible explanations for the positive association between high-salt pattern and the risk of hypertension. Firstly, salt intake as a direct risk factor for hypertension. Secondly, in this pattern, meat products, including processed and cooked meat, are a major source of saturated fat and cholesterol, which may increase the risk of obesity, an important risk factor for hypertension. Thirdly, results from this study indicate that subjects who belonged to the fourth quartile of high-salt

pattern have a lower physical activity level, compared to those in the lowest quartile. Emerging evidence has shown that physical activity as a form of energy expenditure closely related to blood pressure [12].

Regarding to disease state of hypertension patients, the large number of patients were with history of diabetes mellitus 117(78.0%) and 32(21.3%) with cardio-vascular diseases agree with study by De Boer, I. H ;(2017) in USA which said, hypertension affects approximately 70% of patients with diabetes and is approximately twice as common in persons with diabetes as in those without. The overlap between hypertension and diabetes substantially increases the risk of ischemic cerebrovascular disease, retinopathy, and sexual dysfunction. Diabetes mellitus is an independent risk factor for coronary artery disease, and the risk markedly increased when hypertension is present [13].

The present study results indicate that over-weight and obese patients were occupying the highest number. Obesity is always a risk factor for many diseases; diabetes and hypertension are not an exception [14]. Furthermore, in this data the proportion of overweight and obese female patients 23.3% and 22.7% respectively were higher than that of males was similar what reported in the study by Flegal, K. M.A. C., (1998) In US which said obesity affects more women than men in the United States and is a major risk factor for cardiovascular disease (CVD), including hypertension. Notably, obesity identified as the cause of the 3-fold increase in the risk for hypertension in premenopausal women [15]. On the other hand, this study showed positive correlation between body weight and different age groups of patients whereas the proportion of 41-60-years old in overweight and obese category was (28.7. % 20.7%) respectively higher than the proportion of others age groups which agree with study by Farmanfarma, K. K. in Iran (2019) which said the age groups 40–60 had a large prevalence of metabolic syndrome in this study [16].

In our study 66(44%) of patients consumed fruits every day also just about 12(8.0%) consumed vegetables each day. Accordingly, many epidemiological studies have performed to investigate the relationship between fruits and vegetables (FV) consumption and the risk of hypertension. However, the results of these studies have been inconsistent. While FV consumption has been found to be significantly associated with a decreased risk of hypertension in some studies may be as important components of diet, fruit and vegetables (FV) are rich in minerals, vitamins, and folic acid, which have been reported to have beneficial effects on endothelial function. Endothelial dysfunction is also a potential risk factor for hypertension [17].

Furthermore, higher meat consumption may reflect some undetected dietary behavior or lifestyle contributing to a rise in blood pressure. In this study we found that 67(44.7%), consumed meat product every day. Our findings were consistent with previous studies, which reported a significant association between animal food and the risk of hypertension The detrimental effect of the animal food pattern could be attributable to this pattern's unhealthy constituents (e.g., red meat and fats/oils). High consumption of meat, especially red meat containing high amounts of saturated fat and cholesterol, was associated with an elevated risk of obesity. A substantial body of evidence has demonstrated that obesity may play a key role in the development of hypertension Furthermore, higher meat consumption may reflect some undetected dietary behavior or lifestyle contributing to a rise in blood pressure [12]

In this study, we found that, (34.7%) of hypertension patients consumed eggs every day, which agree with the finding in French prospective population-based study initiated in 1990. From the women included those who completed a detailed diet history questionnaire, and who did not have prevalent hypertension or cardiovascular disease at baseline, resulting in 46,424 women. Hypertension cases were self-reported. Eggs and cholesterol intake estimated from dietary history questionnaires. Which found Egg and cholesterol intakes were associated with a higher risk of hypertension in French women [18]

High intake of canned food was higher in hypertension patients in our study which was agree with study by Shi, Z., Papier (2019) in Thailand population which said high intakes of roasted/smoked foods, instant foods, canned foods, fermented fruits/vegetables, fermented foods, soft drinks, deep-fried foods) was associated with increased incident hypertension [19].

Moreover, effects of caffeine appear to be more pronounced in persons who are at risk for hypertension, such as individuals with a family history of hypertension or obesity Our study showed most of hypertension patients (76.7%), (82.7) were consumed coffee and tea respectively rarely which agree with study by Palatini, P., (2007) which said the n the early stage of hypertension there is a nonlinear association between coffee consumption and development of sustained hypertension [20].

CONCLUSION

Hypertension is a challenge for public health professional's all-over the world. It is the leading and most important modifiable risk factor for coronary heart disease and many other diseases. Our study shows that, the dietary patterns of the hypertension patients was different intakes of meat products, eggs, canned and fried food were high while

consumption vegetables and fruits were relatively limited which linked to poor health and increased risk of hypertension. For the reason that dietary habits acquired during hypertension patients persist into older and form the basis of either good health or ill health, as the case may be, in the coming years. Hence, there is a need to educate patients regarding correct dietary habits to ensure that they can live healthy and protect of complications.

So recommended hypertension patients focus on of regular physical activity, the implementation of a healthy diet such as vegetarian diets, and those low in saturated animal fat, low fat milk and high in dietary fiber such as the Dietary Approaches to Stop Hypertension (DASH) diet, can effectively lower blood pressure.

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Conflicts of Interest

The authors declare that they have no duality of interest associated with this manuscript.

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تقييم العوامل الاجتماعية والديموغرافية والعادات الغذائية لدى مرضى ارتفاع ضغط الدم في درنة - ليبيا

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المستخلص

ارتفاع ضغط الدم هو مشكلة صحية عامة عالمية. وهو أحد الأسباب الرئيسية للوفاة المبكرة في جميع أنحاء العالم [1]. أجريت هذه الدراسة في مدينة درنة بليبيا لدراسة الخصائص الاجتماعية والديموغرافية وتقييم العادات الغذائية بين 150 مريضاً بارتفاع ضغط الدم تتراوح أعمارهم بين 20 إلى 96 عامًا. تم الحصول على البيانات من دراسة مقطعية للمرضى ثم تحليلها باستخدام برنامج SPSS الإصدار 24. وكشفت النتائج أن 100 (66.7%) لديهم تاريخ عائلي. بالإضافة إلى ذلك، كان هناك عدد كبير من المرضى الذين لديهم تاريخ مع مرض السكري 117 (78.0%). فيما يتعلق بالقياسات البشرية للمرضى، 44.0% فئة يعانون من زيادة الوزن و34.0% يعانون من السمنة المفرطة. في المقابل، لوحظ وجود علاقة إيجابية بين وزن الجسم والفئات العمرية المختلفة للمرضى. علاوة على ذلك، كان 66 (44.0%) منهم يستهلكون الفواكه يوميًا، كما يستهلك حوالي 12 (8.0%) الخضار يوميًا. إضافة إلى ذلك فإن نسبة استهلاك الحليب كامل الدسم 26.0% يوميًا. علاوة على ذلك، تم تناول 50 (33.3%) و81 (54.0%) من المرضى الأطعمة المعلبة والمقلية على التوالي كل يوم. بالإضافة إلى ذلك، تم استهلاك 67 (44.7%) و52 (34.7%) منتجات اللحوم والبيض على التوالي يوميًا. كشفت تحقيقاتنا أن تناول منتجات الألبان وخاصة الحليب كامل الدسم ومنتجات اللحوم والبيض والأطعمة المعلبة والمقلية كانت مرتفعة بينما كان استهلاك الخضار والفواكه محدودًا نسبيًا مما يرتبط بسوء الصحة وزيادة خطر الإصابة بمضاعفات ارتفاع ضغط الدم.

الكلمات المفتاحية: مرضى ضغط الدم، العادات الغذائية، العوامل الاجتماعية والديموغرافية، درنة